

IN THE CLAIMS:

Please note that all claims currently pending and under consideration in the referenced application are shown below, in clean form, for clarity.

Please amend the claims as follows:

5/2/17
1. (Amended) A method of electrically connecting a semiconductor die to a substrate, comprising:
providing a semiconductor die having a surface having a plurality of bond pads thereon;
providing a substrate having a die side surface, a second attachment surface, at least one via extending through the substrate from the die side surface to the second attachment surface, a plurality of circuits, and a plurality of bond pads located on the second attachment surface of the substrate;
attaching the surface having a plurality of bond pads thereon of the semiconductor die to the die side surface of said substrate; and
connecting said plurality of bond pads of the semiconductor die to said plurality of bond pads of said substrate using a plurality of wire bonds, said plurality of wire bonds extending through said at least one via extending through said substrate.

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2. The method of claim 1, further comprising:
applying an adhesive to a portion of the die side of the substrate to attach the semiconductor die thereto.

3. The method of claim 1, further comprising:
filling at least a portion of the via in the substrate with a sealant.

4. The method of claim 1, further comprising:
filling the via in the substrate with a sealant.

5. A method of electrically connecting a semiconductor die to a master board, comprising:
providing a semiconductor die having a plurality of bond pads thereon;
providing a master board having a plurality of circuit traces thereon;
providing a board having a die side surface, a second attachment surface, at least one via extending through the board from the die side surface to the second attachment surface, a plurality of circuits, and a plurality of bond pads located on the second attachment surface of the board;
providing a plurality of electrical connectors for connecting the plurality of bond pads located on the second attachment surface of the board to the circuit traces of the master board;
attaching said semiconductor die to a portion of the die side surface of the board;
connecting said plurality of bond pads of said semiconductor die to said plurality of bond pads of said board using a plurality of wire bonds, said plurality of wire bonds extending through the at least one via extending through then board; and
connecting said board and master board using said plurality of electrical connectors on said board to said plurality of circuit traces on said master board.

6. The method of claim 5, wherein the board includes a plurality of vias extending therethrough.

7. The method of claim 5, wherein the plurality of electrical connectors comprise solder balls.

8. (Amended) A method of electrically connecting at least two semiconductor die to a substrate, comprising:
providing at least two semiconductor die, each semiconductor die having a surface having a plurality of bond pads thereon;

providing a substrate having a die side surface, a second attachment surface, at least two vias extending through the substrate from the die side surface to the second attachment surface, a plurality of circuits, and a plurality of bond pads located on the second attachment surface of the substrate;

attaching the surface having a plurality of bond pads thereon of a semiconductor die of the at least two semiconductor die to the die side surface of the substrate having the plurality of bond pads of the semiconductor die located over one of the at least two vias extending through the substrate ; and

connecting said plurality of bond pads of the semiconductor die to said plurality of bond pads of said substrate using a plurality of wire bonds, said plurality of wire bonds extending through the one via extending through the board of the at least two vias extending through the substrate.

9. The method of claim 8, further comprising:
applying an adhesive to a portion of the die side of the substrate to attach each semiconductor die thereto.

10. The method of claim 8, further comprising:
filling at least a portion of each via in the substrate with a sealant.

11. The method of claim 8, further comprising:
filling each via in the substrate with a sealant.

12. A method of electrically connecting a plurality of semiconductor die to a master board, comprising:
providing a plurality of semiconductor die, each semiconductor die having a plurality of bond pads thereon;

providing a master board having a plurality of circuit traces thereon;
providing a board having a die side surface, a second attachment surface, a plurality of vias
extending through the board from the die side surface to the second attachment surface, a
plurality of circuits, and a plurality of bond pads located on the second attachment surface
of the board;
providing a plurality of electrical connectors for connecting the plurality of bond pads located on
the second attachment surface of the board to the circuit traces of the master board;
attaching each semiconductor die of the plurality of semiconductor die to a portion of the die side
surface of the board;
connecting said plurality of bond pads of each semiconductor die to said plurality of bond pads of
said board using a plurality of wire bonds, said plurality of wire bonds extending through
the a via extending through then board; and
connecting said board and master board using said plurality of electrical connectors on said board
to said plurality of circuit traces on said master board.

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13. The method of claim 12, wherein the plurality of electrical connectors comprise
solder balls.

14. The method of claim 12, wherein the plurality of electrical connectors comprise
pins.

15. The method of claim 12, further comprising:
filling at least a portion of each via in the board with a sealant.

16. The method of claim 12, further comprising:
filling each via in the board with a sealant.

17. (Amended) A method of electrically connecting a semiconductor die to a master board, comprising:
providing a semiconductor die having a plurality of bond pads thereon;
providing a master board having a plurality of circuit traces thereon;
providing a board having a die side surface, a second attachment surface, at least one via extending through the board from the die side surface to the second attachment surface, a plurality of circuits, and a plurality of bond pads located on the die side surface of the board;
providing a plurality of electrical connectors for connecting the plurality of bond pads located on the die side surface of the board to the circuit traces of the master board;
attaching said semiconductor die to a portion of the die side surface of the board;
connecting said plurality of bond pads of said semiconductor die to said plurality of bond pads of said board using a plurality of wire bonds; and
connecting said board and master board using said plurality of electrical connectors on said board to said plurality of circuit traces on said master board.

18. The method of claim 17, wherein the board includes a plurality of vias extending therethrough.

19. The method of claim 17, wherein the plurality of electrical connectors comprise wire bonds.

20. (Amended) A method of electrically connecting a plurality of semiconductor die to a master board, comprising:
providing a plurality of semiconductor die, each semiconductor die having a plurality of bond pads thereon;
providing a master board having a plurality of circuit traces thereon;

providing a board having a die side surface, a second attachment surface, a plurality of vias extending through the board from the die side surface to the second attachment surface, a plurality of circuits, and a plurality of bond pads located on the die side surface of the board;

providing a plurality of electrical connectors for connecting a plurality of bond pads located on the second attachment surface of the board to the circuit traces of the master board;

attaching each semiconductor die of the plurality of semiconductor die to a portion of the die side surface of the board;

connecting said plurality of bond pads of each semiconductor die to said plurality of bond pads of said board using a plurality of wire bonds; and

connecting said board and master board using said plurality of electrical connectors on said board to said plurality of circuit traces on said master board.

21. The method of claim 20, wherein the plurality of electrical connectors comprise wire bonds.

22. The method of claim 20, wherein the plurality of electrical connectors comprise pins.

23. The method of claim 20, further comprising:
filling at least a portion of each via in the board with a sealant.

24. The method of claim 20, further comprising:
filling each via in the board with a sealant.

25. The method of claim 20, further comprising:
applying an adhesive to a portion of the die side surface to attach each semiconductor die thereto.

26. (Amended) A method of attaching a semiconductor die to a substrate, comprising:
providing a semiconductor die having a surface having at least one bond pads thereon;
providing a substrate having a die side surface, a second attachment surface, at least one via extending through the board from the die side surface to the second attachment surface, a plurality of circuits, and at least one bond pad located on the second attachment surface of the substrate;
attaching the surface having at least one bond pad thereon of the semiconductor die to the die side surface of said substrate; and
connecting said at least one bond pad of the semiconductor die to said at least one bond pad of said substrate using at least one wire bond, said at least one wire bond extending through said at least one via extending through said substrate.

27. The method of claim 26, further comprising:
applying an adhesive to a portion of the die side of the substrate to attach the semiconductor die thereto.

28. The method of claim 26, further comprising:
filling at least a portion of the via in the substrate with a sealant.

29. The method of claim 26, further comprising:
filling the via in the substrate with a sealant.

30. A method of attaching a semiconductor die to a master board, comprising:
providing a semiconductor die having at least one bond pad thereon;
providing a master board having at least one circuit trace thereon;
providing a board having a die side surface, a second attachment surface, at least one via
extending through the board from the die side surface to the second attachment surface, at least
one circuit, and at least one bond pad located on the second attachment surface of the board;
providing at least one electrical connector for connecting the at least one bond pad located on the
second attachment surface of the board to the at least one circuit trace of the master
board;
attaching said semiconductor die to a portion of the die side surface of the board;
connecting said at least one bond pad of said semiconductor die to said at least one bond pad of
said board using at least one wire bond, said at least one wire bond extending through the
at least one via extending through the board, and
connecting said board and master board using said at least one electrical connector on said board
to said at least one circuit trace on said master board.

31. The method of claim 30, wherein the board includes a plurality of vias extending
therethrough.

32. The method of claim 30, wherein the at least one electrical connector comprises at
least one solder ball.

33. (Amended) A method of attaching at least two semiconductor die to a substrate,
comprising:
providing at least two semiconductor die, each semiconductor die having a surface having at least
one bond pad thereon;
providing a substrate having a die side surface, a second attachment surface, at least two vias

extending through the substrate from the die side surface to the second attachment surface, at least two circuits, and at least two bond pads located on the second attachment surface of the substrate;

attaching the surface having at least one bond pad thereon of a semiconductor die of the at least two semiconductor die to the die side surface of the substrate having the at least one bond pad of the semiconductor die located over one of the at least two vias extending through the substrate; and

connecting said at least one of each of the semiconductor die to said at least two bond pads of said substrate using at least two wire bonds, at least one wire bond of said at least two wire bonds extending through the one via extending through the board of the at least two vias extending through the substrate.

34. The method of claim 33, further comprising:
applying an adhesive to a portion of the die side of the substrate to attach each semiconductor die thereto.

35. The method of claim 33, further comprising:
filling at least a portion of each via in the substrate with a sealant.

36. The method of claim 33, further comprising:
filling each via in the substrate with a sealant.

37. A method of attaching a plurality of semiconductor die to a master board, comprising:
providing a plurality of semiconductor die, each semiconductor die having at least one bond pad thereon;
providing a master board having a plurality of circuit traces thereon;

providing a board having a die side surface, a second attachment surface, a plurality of vias extending through the board from the die side surface to the second attachment surface, a plurality of circuits, and a plurality of bond pads located on the second attachment surface of the board;

providing a plurality of electrical connectors for connecting the plurality of bond pads located on the second attachment surface of the board to the circuit traces of the master board;

attaching each semiconductor die of the plurality of semiconductor die to a portion of the die side surface of the board;

connecting said at least one bond pad of each semiconductor die to said plurality of bond pads of said board using a plurality of wire bonds, said plurality of wire bonds extending through the plurality of vias extending through then board; and

connecting said board and master board using said plurality of electrical connectors on said board to said plurality of circuit traces on said master board.

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38. The method of claim 37, wherein the plurality of electrical connectors comprise solder balls.

39. The method of claim 37, wherein the plurality of electrical connectors comprise pins.

40. The method of claim 37, further comprising:
filling at least a portion of each via in the board with a sealant.

41. The method of claim 37, further comprising:
filling each via in the board with a sealant.

42. (Amended) A method of attaching a semiconductor die to a master board, comprising:
providing a semiconductor die having at least one bond pad thereon;
providing a master board having at least one circuit trace thereon;
providing a board having a die side surface, a second attachment surface, at least one via extending through the board from the die side surface to the second attachment surface, at least one circuit, and at least one bond pad located on the die side surface of the board;
providing at least one electrical connector for connecting the at least one bond pad located on the die side surface of the board to the at least one circuit trace of the master board;
attaching said semiconductor die to a portion of the die side surface of the board;
connecting said at least one bond pad of said semiconductor die to said at least one bond pads of said board using at least one wire bond; and
connecting said board and master board using said at least one electrical connector on said board to said at least one circuit trace on said master board.

43. The method of claim 42, wherein the board includes a plurality of vias extending therethrough.

44. The method of claim 42, wherein the at least one electrical connector comprises at least one wire bond.

45. (Amended) A method of attaching a plurality of semiconductor die to a master board, comprising:
providing a plurality of semiconductor die, each semiconductor die having at least one bond pad thereon;
providing a master board having a plurality of circuit traces thereon;

providing a board having a die side surface, a second attachment surface, a plurality of vias extending through the board from the die side surface to the second attachment surface, a plurality of circuits, and a plurality of bond pads located on the die side surface of the board;

providing a plurality of electrical connectors for connecting a plurality of bond pads located on the second attachment surface of the board to the circuit traces of the master board;

attaching each semiconductor die of the plurality of semiconductor die to a portion of the die side surface of the board;

connecting said at least one bond pad of each semiconductor die to said plurality of bond pads of said board using a plurality of wire bonds; and

connecting said board and master board using said plurality of electrical connectors on said board to said plurality of circuit traces on said master board.

46. The method of claim 45, wherein the plurality of electrical connectors comprise wire bonds.

47. The method of claim 45, wherein the plurality of electrical connectors comprise pins.

48. The method of claim 45, further comprising:
filling at least a portion of each via in the board with a sealant.

49. The method of claim 45, further comprising:
filling each via in the board with a sealant.

50. The method of claim 45, further comprising:
applying an adhesive to a portion of the die side surface to attach each semiconductor die thereto.